

6. Claims

1. An information processing system comprising
 - a storage equipment which includes a logical unit
 - 5 logically assigned to physical devices and
 - an information processing apparatus which sends data
 - input/output requests to said storage equipment,
 - wherein
 - the data input/output requests are transferred
 - 10 through logical paths serving as communication paths to said
 - logical unit,
 - wherein
 - a cache memory is provided to prefetch and store both
 - data in a location to be accessed by one of said data
 - 15 input/output requests and data in locations following said
 - location within said physical devices,
 - said information processing apparatus comprising
 - a path selection management section which
 - manages configurations of a plurality of blocks into which
 - 20 said logical unit is divided,
 - an I/O request allocation section which
 - allocates data input/output requests to be transmitted to
 - said storage equipment to said logical paths, and
 - I/O processing units which transmit said data
 - 25 input/output requests through said logical paths, according
 - to the allocation determined by said I/O request allocation
 - section, pursuant to an established protocol,

wherein

said path selection management section assigns at least one of said logical paths to one of said blocks.

5 2. The information processing system according to claim 1, wherein said I/O request allocation section includes

a section to detect path fault which detects a faulty path among said logical paths and

a section to detect path recovery which detects
10 recovery of the faulty path among said logical paths,
wherein

when a faulty path is detected by said section to detect path fault or when the faulty path recovery is detected by said section to detect path recovery, said path selection
15 management section reconfigures said blocks by altering size of said blocks and/or the number of paths assigned to said blocks.

3. The information processing system according to claim 1,
20 wherein said cache memory is included in a disk control unit within said storage equipment.

4. The information processing system according to claim 1,
wherein said I/O processing units are provided with said
25 cache memory.

5. The information processing system according to claim 1,

wherein said path selection management section includes
a path management section which creates a path
management table containing information about said logical
paths that are recognizable at the start of said information
5 processing apparatus,

a blocks setup management section which creates an LU
management table containing information about said logical
units, referring to said path management table, and

a block management section which creates a block
10 management table containing information about said blocks,
referring to said LU management table,
wherein

said path selection management section divides said
logical unit into a plurality of blocks and assigns said
15 logical paths to said blocks, referring to said block
management table.

6. An information processing apparatus which sends data
input/output requests to a storage equipment which includes
20 a logical unit logically assigned to physical devices
through logical paths serving as communication paths to said
logical unit, said information processing apparatus
comprising

a path selection management section which manages
25 configurations of a plurality of blocks into which said
logical unit is divided,

an I/O request allocation section which allocates data

input/output requests to be transmitted to said storage equipment to said logical paths, wherein

I/O processing units which transmit said data
5 input/output requests through said logical paths, according to the allocation determined by said I/O request allocation section, pursuant to an established protocol, wherein said path selection management section assigns at least one of said logical paths to one of said blocks.

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7. The information processing apparatus according to claim 6, wherein said storage equipment or said information processing apparatus is provided with a cache memory which prefetches and stores both data in a location to be accessed
15 by one of said data input/output requests and data in locations following said location within said physical devices.

8. The information processing apparatus according to claim
20 6, said I/O request allocation section includes

a section to detect path fault which detects a faulty path among said logical paths and

a section to detect path recovery which detects recovery of the faulty path among said logical paths,

25 wherein

when a faulty path is detected by said section to detect path fault or when the faulty path recovery is detected by

said section to detect path recovery, said path selection management section reconfigures said blocks by altering size of said blocks and/or the number of paths assigned to said blocks.

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9. The information processing apparatus according to claim 6, wherein said I/O processing units are provided with said cache memory.

10 10. The information processing apparatus according to claim 6, wherein said path selection management section includes
a path management section which creates a path management table containing information about said logical paths that are recognizable at the start of said information
15 processing apparatus,

a blocks setup management section which creates an LU management table containing information about said logical units, referring to said path management table, and

a block management section which creates a block
20 management table containing information about said blocks, referring to said LU management table,
wherein

said path selection management section divides said logical unit into a plurality of blocks and assigns said
25 logical paths to said blocks, referring to said block management table.

11. A method for controlling an information processing apparatus which sends data input/output requests to a storage equipment which includes a logical unit logically assigned to physical devices through logical paths serving
5 as communication paths to said logical unit, in which method setting up is performed for configurations of a plurality of blocks into which said logical unit is divided, said method comprising

creating a path management table, based on information
10 about said logical paths that are recognizable at the start of said information processing apparatus,

creating an LU management table containing information about said logical units by reference to said path management table,

15 creating a block management table containing information about said blocks by reference to said LU management table,

dividing said logical unit into a plurality of blocks by reference to said block management table, and

20 assigning at least one of said logical paths to one of said blocks.

12. The control method according to claim 11, further comprising

25 reconfiguring said blocks by altering size of said blocks and/or the number of paths assigned to said blocks when a faulty path is detected among said logical paths or

when recovery of the faulty path among said logical paths is detected.

13. A method for controlling an information processing
5 apparatus which sends data input/output requests to a storage equipment which includes a logical unit logically assigned to physical devices and divided into a plurality of blocks through logical paths serving as communication paths to said logical unit, said method comprising
10 selecting, based on one of said data input/output requests, an I/O processing unit assigned to a block where data to be accessed by the data input/output request exists and making the selected I/O processing unit process the data input/output request.

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14. A method for controlling an information processing apparatus which sends data input/output requests to a storage equipment which includes a logical unit logically assigned to physical devices and divided into a plurality
20 of blocks through logical paths serving as communication paths to said logical unit, said method comprising
determining whether data to be accessed by one of said data input/output requests is stored on a cache memory, if the data to be accessed by the data input/output request is
25 stored on said cache memory,
selecting an I/O processing unit that processed the last data input/output request and making said cache memory

work, if the data to be accessed by the data input/output request is not stored on said cache memory,

selecting an I/O processing unit assigned to a block where the data to be accessed by the data input/output request exists and making the selected I/O processing unit process the data input/output request.

15. A computer program to implement functions of an information processing apparatus which sends data input/output requests to a storage equipment which includes a logical unit logically assigned to physical devices through logical paths serving as communication paths to said logical unit, said computer program comprising

computer program code means for creating a path management table, based on information about said logical paths that are recognizable at the start of said information processing apparatus,

computer program code means for creating an LU management table containing information about said logical units by reference to said path management table,

computer program code means for creating a block management table containing information about said blocks by reference to said LU management table,

computer program code means for dividing said logical unit into a plurality of blocks by reference to said block management table, and

computer program code means for assigning at least one

of said logical paths to one of said blocks.

16. The computer program according to claim 15, further comprising

5 computer program code means for reconfiguring said blocks by altering size of said blocks and/or the number of paths assigned to said blocks when a faulty path is detected among said logical paths or when recovery of the faulty path among said logical paths is detected.

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17. A computer program to implement functions of an information processing apparatus which sends data input/output requests to a storage equipment which includes a logical unit logically assigned to physical devices
15 through logical paths serving as communication paths to said logical unit, said computer program comprising

 computer program code means for managing configurations of a plurality of blocks into which said logical unit is divided,

20 computer program code means for allocating the data input/output requests to be transmitted to said storage equipment to said logical paths,

 computer program code means for transmitting said data input/output requests through said logical paths, according
25 to the allocation determined by said allocation means, pursuant to an established protocol, and

 computer program code means for assigning at least one

of said logical paths to one of said blocks.